

# Clean Cities Transportation

Workshop for Almaty

## **NGV Implementation Strategies** *With a focus on market-based incentives*

***Almaty, Kazakhstan***

***30-31 March 2011***

***Dr. Jeffrey M. Seisler, CEO***



# THE INVOLVEMENT OF GOVERNMENT IS ESSENTIAL\*

(Strategies Supported by Specific Actions!)

- Create incentives (financial & others)
- Enforce mandates (but *with* incentives)
- Develop standards
- Fund research & development
- Leadership by example
- PR & communications

\* What's good for one alternative fuel is good for them all!

# NATIONAL GOVERNMENT\* ACTION SUPPORTING NGVs

- *What motivates them?*
- *How supportive are they?*
- *What are they doing?*
- *What lessons can be learned?*

*\*Regional, state & local government also have a strong role to play, and can be as important as national support!*

# Primary Motivations of Countries to Use NGVs

(Based on Survey of 28 Countries)\*

<b>Economics</b>	<b>11</b>
<b>Environment</b>	<b>12</b>
<b>Energy Security</b>	<b>5</b>

- Energy security includes policies to substitute the domestic use of oil by natural gas with the aim of increasing oil exports (i.e. Venezuela, Iran) **or reducing oil imports (i.e. USA & Europe)**

# How Supportive are Key Domestic Stakeholders of the NGV Program in 28 Countries\*?

	<b>Government Support</b>	<b>Gas Industry Support</b>
<b>Very Supportive</b>	<b>17</b>	<b>16</b>
<b>Moderately Supportive</b>	<b>7</b>	<b>7</b>
<b>Not Supportive</b>	<b>4</b>	<b>5</b>

\*Clean Fuels Consulting NGV Country Profiles of 28 national markets (2008/2009)

# **Government Incentives Remain a Key to NGV Development**

- **A wide variety of government incentives have appeared worldwide**
  - **Fiscal: cash rebates; exemption from congestion charges; tax benefits (road, income, property fuel; etc.)**
  - **Free parking;**
  - **Clean Vehicle access lanes at airports/train stations**
- **Some countries mandate NGVs**
  - **Venezuela: 40,000 NGVs**
  - **Iran: As many that can be converted**
  - **India: Diesel buses, 8 regions and more to expand**

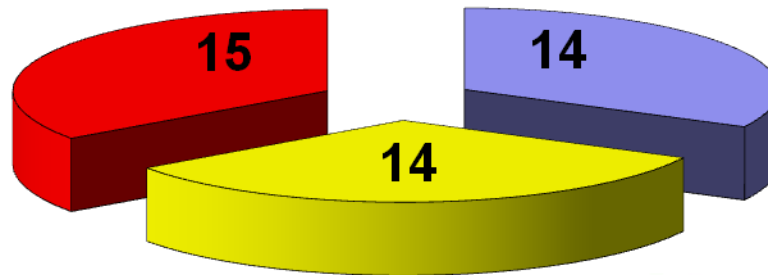
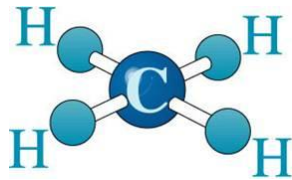
# European NGV Association Survey of European Government Incentives & Other Select Worldwide Countries\*

- Incentives : 18 Countries
- Mandates : 26 Countries
- Funding R&D : 34 Countries
- Leadership by example : 16 Countries
- Tax incentives : 45 Countries

\*As per July 2004

# Forms of Government Incentives from 28 Surveyed Countries

## Taxes



- Incentives for NGVs
- Incentives for Fuelling Stations
- Low CNG tax



# **POLICY TOOLS**

## **Financial Incentives**

**(Also called *Market Based Incentives*)**

# MARKET BASED INSTRUMENTS

## Signals to the Market

- The European Council welcomes more active use of ***economic instruments*** to encourage purchasing of energy-efficient and clean vehicles as well as the development, production and market penetration of alternative and renewable fuels. (*Communication June 2007*)

# WHY USE MARKET BASED INCENTIVES TO ENHANCE THE ENVIRONMENT? (EU rationale)

- Change market behavior by improving price signals (*behavior modification*)
- Allow industry flexibility in meeting objectives and reducing cost of compliance
- Long term incentives to pursue technological innovation
- Support employment (through environmental tax & fiscal reform)

# MARKET BASED INSTRUMENTS

## What is popular?

- Taxation is the most cross-cutting
  - Incentives (subsidies)
  - Penalties
  - Exemptions
- Three main options in the transport sector
  - Fuel taxes
  - Vehicle taxes (sales, import, registration)
  - Vehicle use taxes (i.e. road tolls, parking..)
- Tax *credits* or tax *deductions*
  - \$/€ 5000 *deduction* from your taxable income at 50% tax = \$2,500
  - \$5000 *credit* from taxes you owe = \$/€ 5,000!

# LOW-COST (to government) MARKET BASED INCENTIVES

*but with financial implications!*

- Exemptions from 'Bad-Air' day traffic bans or limitations (Milan, Paris, etc.)
- Exemptions from congestion charges (London, Stockholm)
- 'No-Wait' taxi zones at airports & train stations (i.e. Goteborg & other Swedish cities)
- Exemptions from time-of-day traffic restrictions (i.e. access to carpool lanes...United States, mainly) (*can save 1 hr/day in traffic = 6.25 weeks of work equivalent per year*)

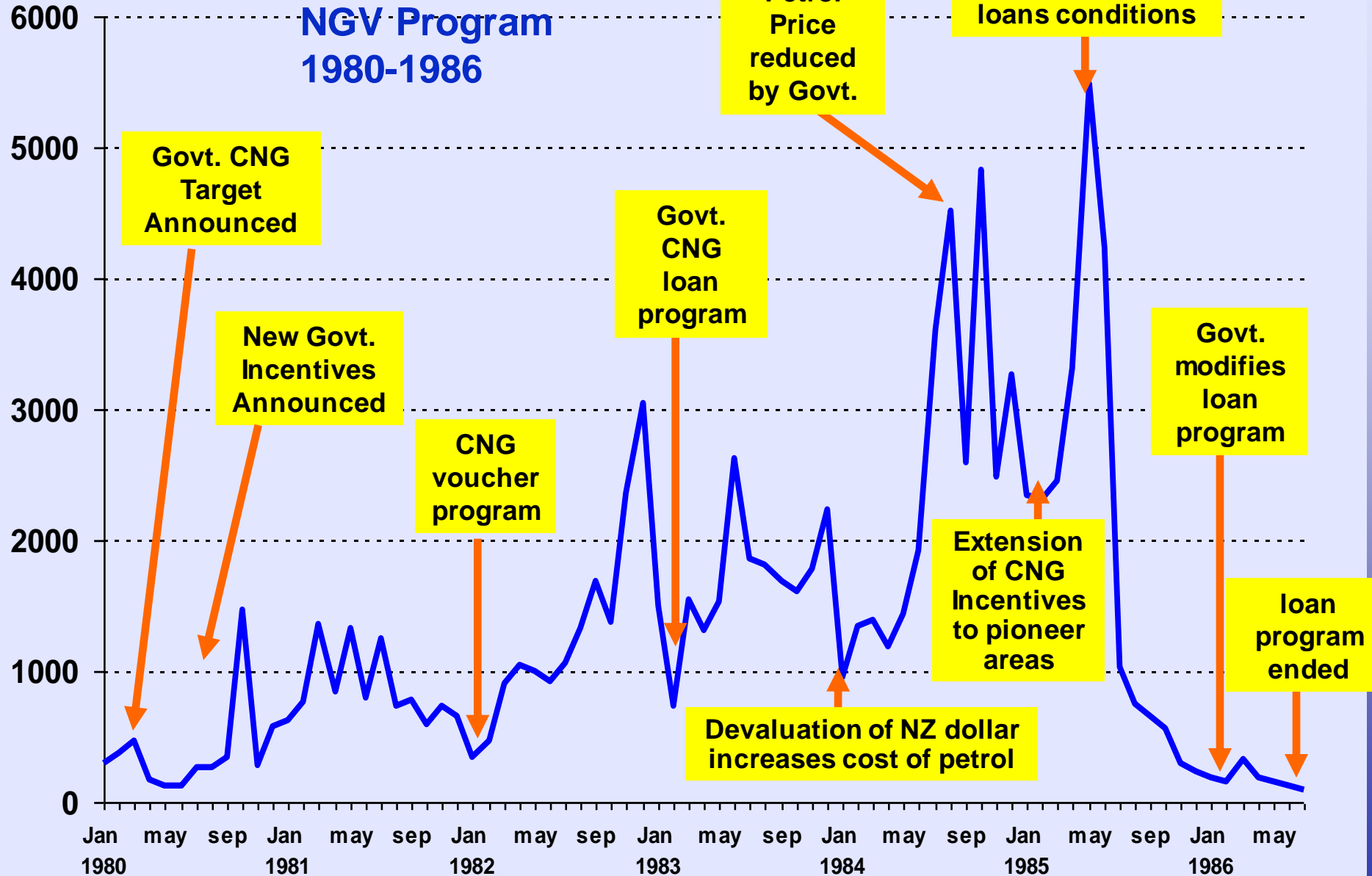
# **Market-Based Incentives EXAMPLES & LESSONS LEARNED**

# INCENTIVES & THE NEW ZEALAND NGV EXPERIENCE

- Experience shows that conversions per month were sharply affected by government incentives
- When incentives occurred, market share increased
- When incentives were removed, market share dropped significantly

# Effect of Incentives on New Zealand NGV Program 1980-1986

Conversions per  
month





# Market-Based Incentives

## U.S. Tax Provisions

- Energy Policy Act of 1992: tax **deductions** for conversions (\$2000 for LDVs; up to \$50,000 for HDVs) and up to \$50,000 for fuelling station construction
- Tax deductions reduced gradually over time (very important strategy!)
- U.S. Energy Policy Act of 2005 provides tax **credits** for qualified medium & heavy duty alternative fuel vehicles (CNG, LNG, hybrid, LPG) from \$2000-32,000
- Tax advantages must be offered for the cost **differential** between NGV & petroleum vehicle, not for **FULL** value of the vehicle!

# ENERGY POLICY ACT 1992 (US)

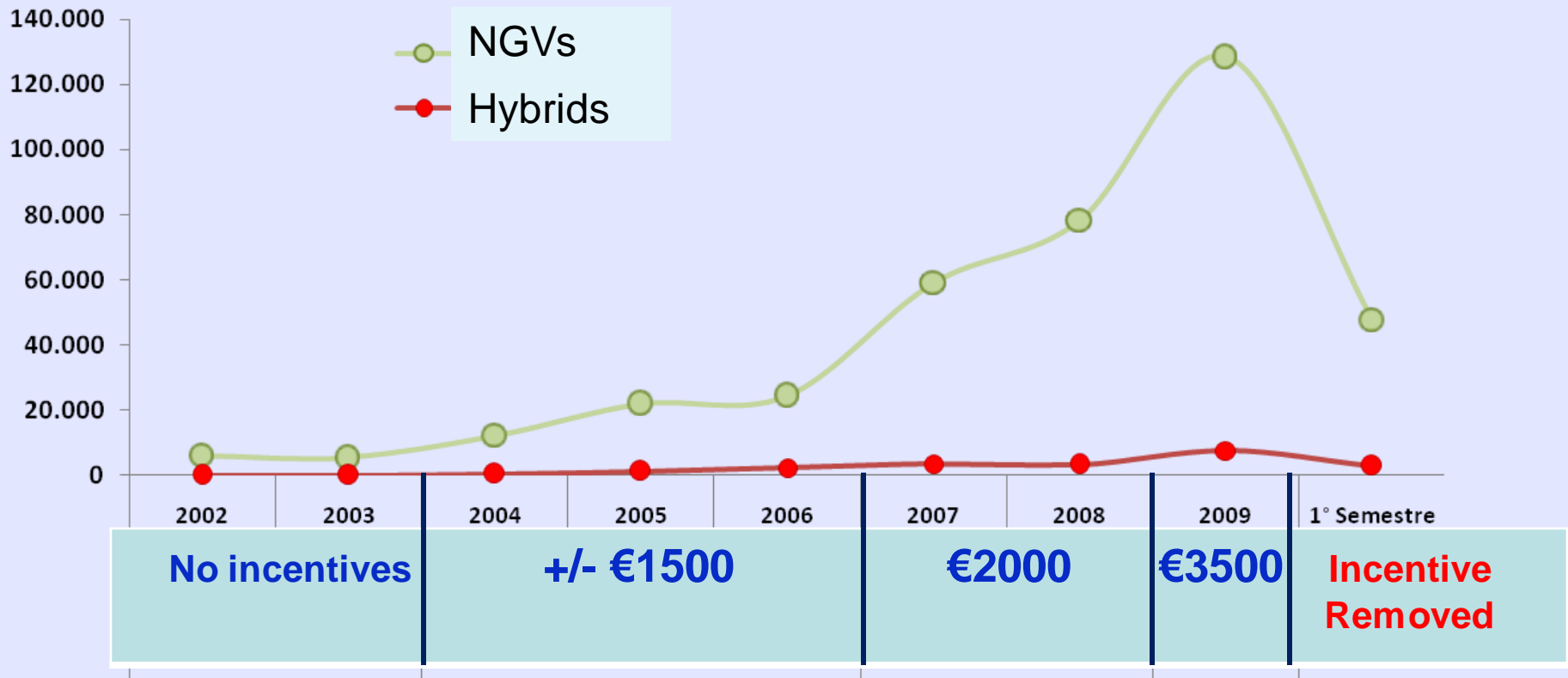
## Alternative Fuel Tax Maximum Deductions

<b>Vehicle (0-10.000 lbs, <i>gross vehicle weight</i> (gvw))</b>	<b>US\$ 2.000</b>
<b>Vehicle (10.001-26.000 lbs, gvw)</b>	<b>US\$ 5.000</b>
<b>Truck or van (&gt;26.000 lbs.gvw)</b>	<b>US\$ 50.000</b>
<b>Bus</b>	<b>US\$ 50.000</b>
<b>Fuelling facility</b>	<b>US\$ 100.000</b>

# THE US INCENTIVE TIPS

- **Focus projects on reducing emissions or petrol use**
- **Offer large funding (thousands US\$/vehicle purchase)**
- **Programmes have to be easy to administer (no refund hassle, etc)**
- **Incentives are needed to support the fuelling infrastructure as well as vehicles**
- **Grants & cash rebates are more popular than tax credits ( especially for consumers OR vehicle salespeople)**

# ITALIAN NGV GROWTH PER YEAR: WITH & WITHOUT FISCAL INCENTIVES



Source: M.Ziosi, NGV System Italia, 2011

# Market-Based Incentives

## Austria

- The City of Vienna, with the support of OMV, offered €600 incentive for the first 1000 customers who buy an NGV
- The Austrian natural gas company OMV provided €200 incentive to OEM sales people *and* monetary incentive to owners of the car dealerships to sell NGVs

# Market-Based Incentives

## German Tax Rules for Natural Gas & LPG

- 1996-2009 CNG tax reduced by 61% (from DM 47.6 kWhr to DM 18.7 kWhr)
- 2002 benefits extended to 2020
- March 2006 tax rules provide break for LPG and CNG: to 2009 for LPG; 2020 for CNG
- June 2006 Bundestag adapts law to make both tax breaks apply through 2018.
- *Lesson learned: Government policies need to be consistent and stable to assure customers of long term market initiatives*

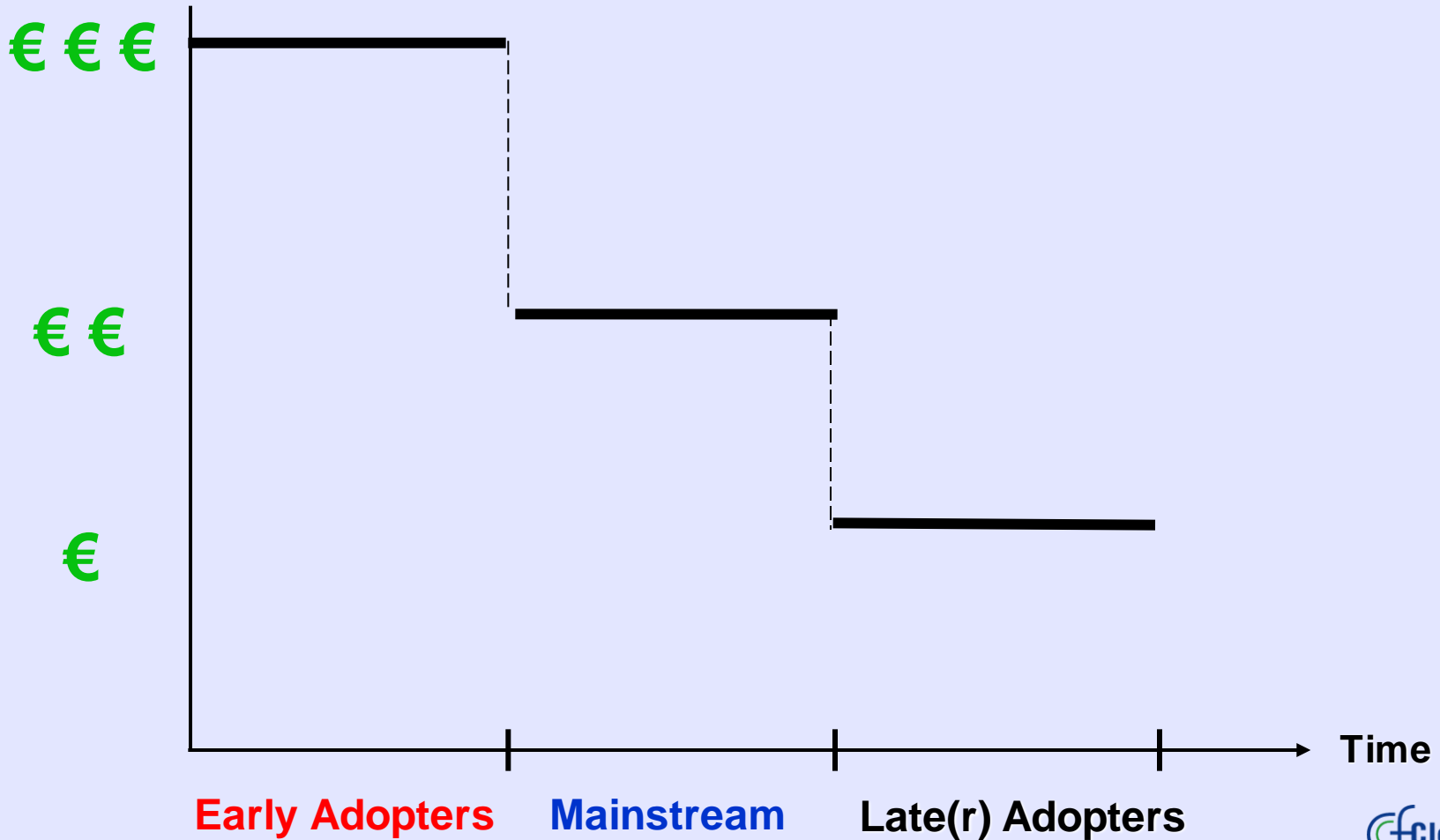
# **BERLIN TAXI CAB PROGRAM**

## **“TUT” 1000 taxis (2001)**

- **First 400 purchasers of Euro 4 taxis (2005 standard) received € 3068**
- **Second 300 purchases received € 2567**
- **The last 300 purchasers received € 2045**
- **Local gas company provided fuel vouchers ranging from €1534 to €1043 for early to later purchasers**

# REWARD THE EARLY ADOPTERS

Incentive Level



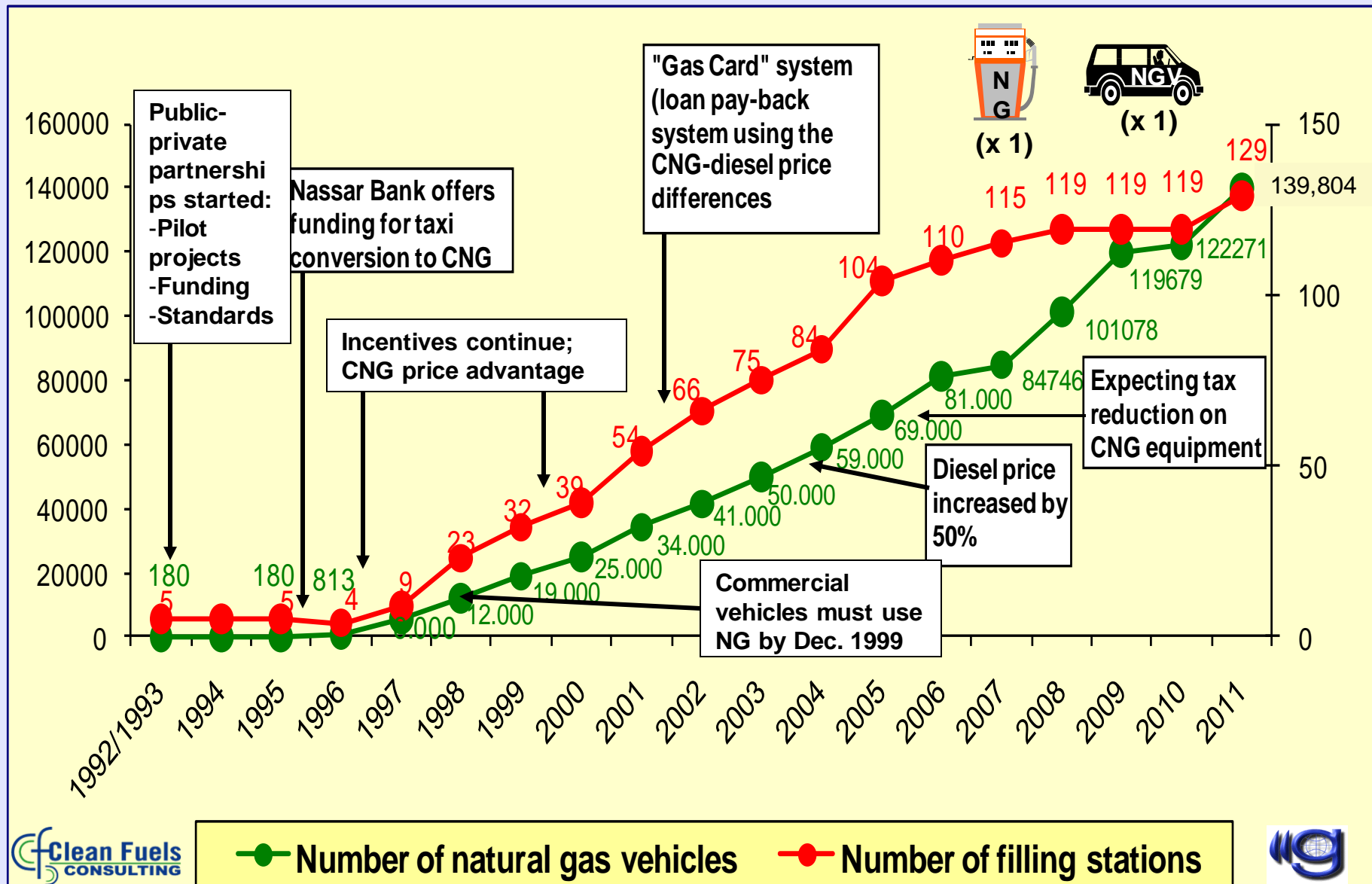


# **Market-Based Incentives**

## **Creative Financing**

- **Egyptian ‘shared savings plan’ organized by government & Nassar Bank**
- **No cost ‘loans’ to taxi drivers to convert vehicles: conversions provided ‘free’**
- **Cost repaid by paying petrol price for natural gas until loan is repaid, then fuel costs drop by 50%**
- **Cash flow back to bank/government is continual and can be ‘recycled’ back to new customers**
- **Cleaner air contribution is immediate and growing**
- **Revenue impact = time value of money loaned**

# EGYPT



# **POLICY TOOLS:**

## **Non-Financial Incentives**

- **Exemptions from ‘Bad-Air’ day traffic bans or limitations** 4 Italian cities, Paris, etc.)
- **‘No-Wait’ taxi zones** at airports & train stations (i.e. Goteborg)
- **Exemptions from time-of-day traffic restrictions** (i.e. London congestion charge;
- **Access to carpool lanes...**United States, mainly; restrictions on commercial traffic[?] )

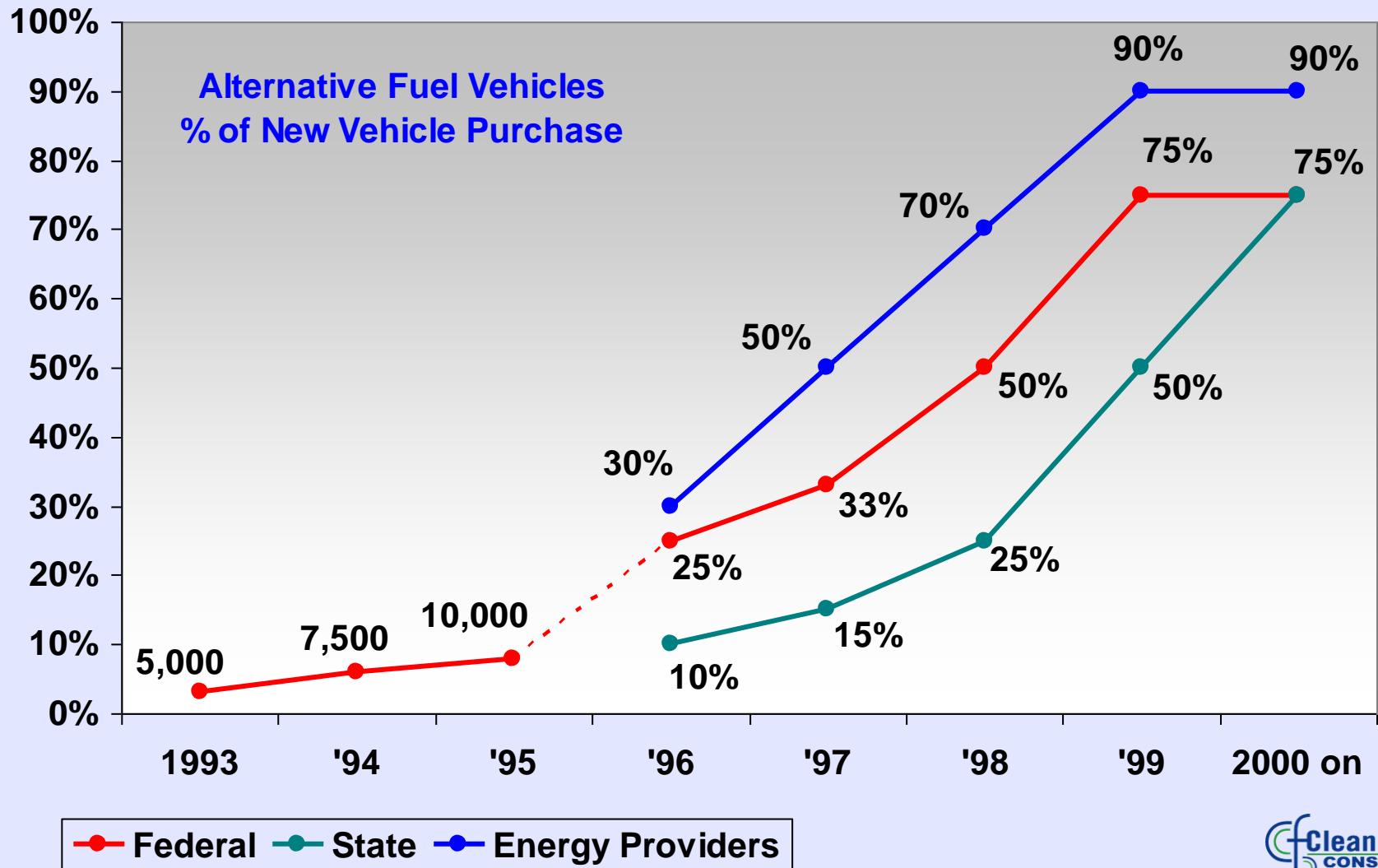
# POLICY TOOLS:

## Mandates

- Best with incentives
- Transition approach most likely for success (i.e. gradual increase of % procurements of vehicles over time)
- Mandates *must* be enforceable **AND** enforced

# ENERGY POLICY ACT 1992 (US)

## Fleet Mandates



# THE INDIA EXPERIENCES WITH NGV MANDATES

- 1998 decree that *public* vehicle convert to NGVs by 2001
- Supreme court enforced deadline although majority of buses remained on diesel (only 6 CNG fuelling stations installed).
- Public unable to get to work; riots occurred & 6 buses were burned. Deadline was prolonged.
- The govt. adopt “Command & Control” & “Market Mechanism” approaches (fines & follow-up).

→ ***Lesson learned: Gradual phase-in implementation & an enforceable plan are needed***

# **POLICY TOOLS:**

## ***WHEN DO MANDATES WORK?***

- **Best with incentives**
- **Transition approach most likely for success (i.e. gradual increase of % procurements of vehicles over time)**
- **Mandates *must* be enforceable *AND* enforced**
- **Financial ‘carrot’ helps ensure compliance**

# POLICY TOOLS

## Standards

- A foundation for commercializing technologies
- Complex international networks
- Harmonization is the end-goal
- (This topic was discussed in detail in the previous Session 5)



# **POLICY TOOLS:**

## **Funding for RD&D**

- Advancements possible even for ‘market proven’ technologies (like NGVs)
- Private sector can’t pay (all) & keep product costs low
- Over-investment in long-term alternative fuels and technologies can penalize the ones that are available today (i.e. hydrogen or electric vehicles) (Don’t put all the financial eggs in one basket)

# POLICY TOOLS:

## Leadership by Example

- Governments purchasing clean vehicles can motivate industry (safety, Environmentally Enhanced Vehicles, renewables, etc.) by helping to create a critical mass needed to reach economies of scale
- New initiatives fostered by *innovators*, followed by the rest of the 'bell-shaped-curve'

# NGV LEADERSHIP BY EXAMPLE



**Bill Clinton 1994**



**Cong/Gov. Bob Wise's  
'New NGV'**



**Queen Silvia, Sweden  
in her NGV**



**PM John Major with his  
'fleet' NGV**



**Boone Pickens' Backyard FuelMaker  
with the Bushes 1992**

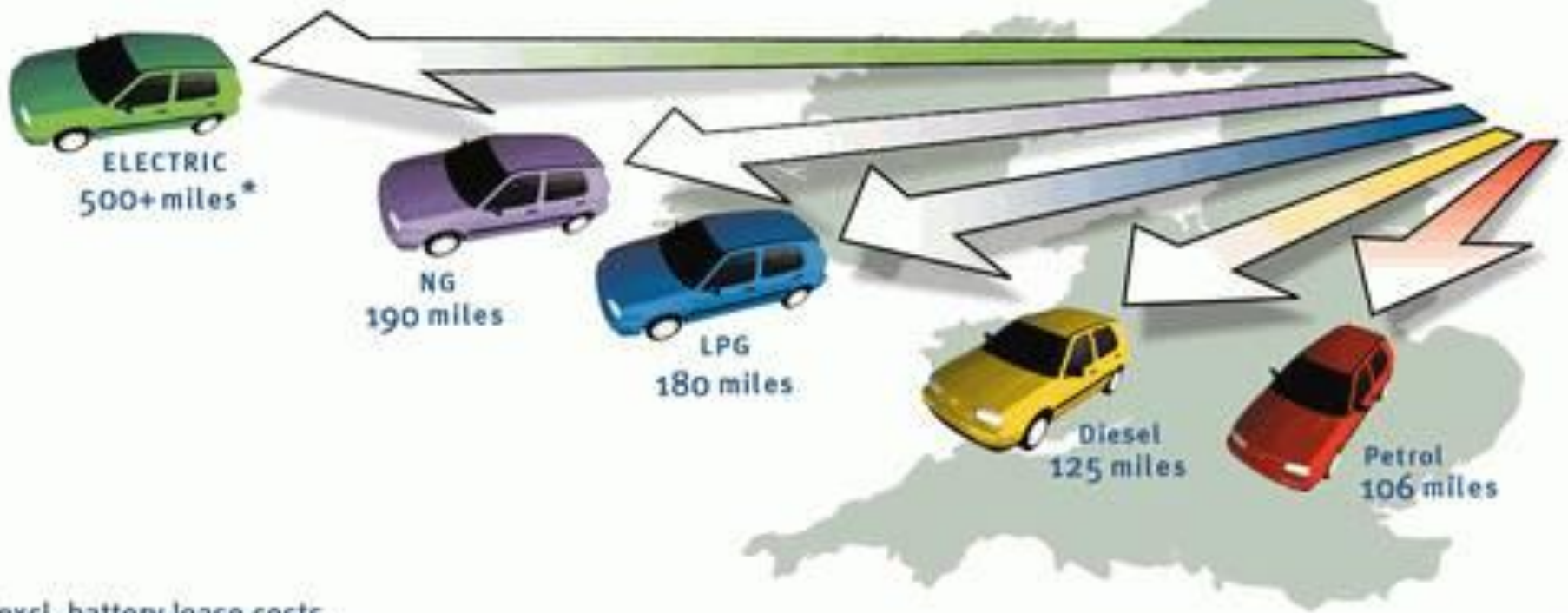


**G. Bush Sr. NGV @  
the White House  
1993**

# **POLICY TOOLS:** **COMMUNICATIONS**

# PR & COMMUNICATIONS: Marketing

Distance Travelled  
on £10 of Fuel



\* excl. battery lease costs

Example only: Numbers are no longer representative of current fuel prices



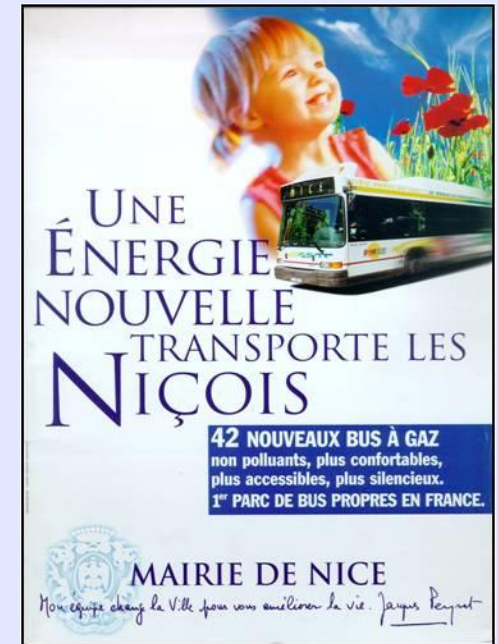
# MARKETING NGVs



Fuel Station Signage



Billboards (cheap)



Advertising



‘Rolling Billboards’



# WHAT WE CAN LEARN FROM COUNTRY EXPERIENCES?

- Policies *MUST* be balanced between carrots & sticks (incentives & mandates)
- Policies *MUST* be *consistent* over time (vision, strategy & focus)
- Incremental, transitional actions are required; not “knee jerk”, reactive policies
- **Pro**-active is better than **re**-active

# POLICY MAKING OPPORTUNITIES & CHALLENGES

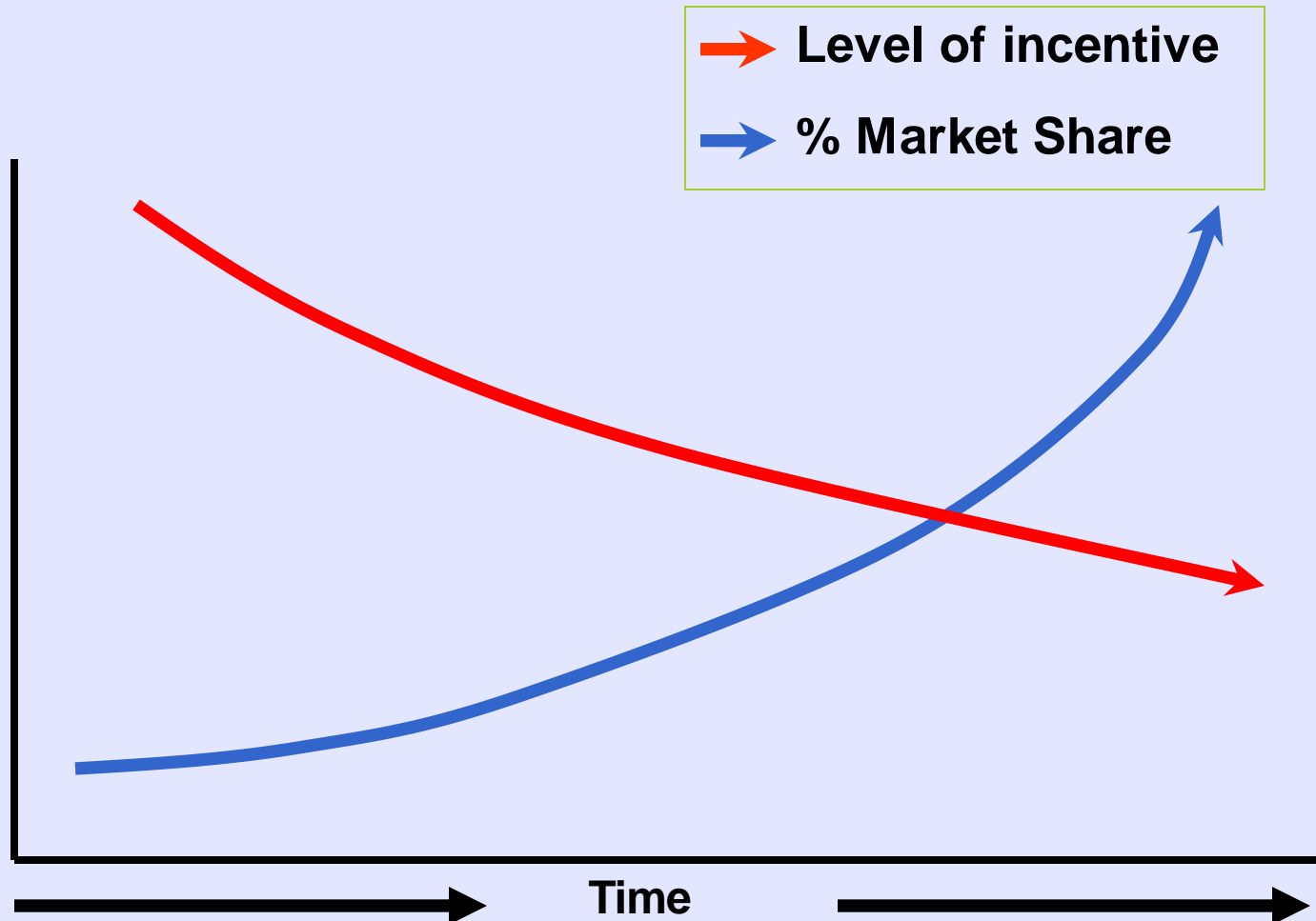
- Positive-sum (win-win) approach is advisable
- Stakeholder input (consensus?) is best for policy sustainability
- *All* tools should be promoted to ensure long-term sustainability of strategies
- Reporting & feedback mechanisms allow for mid-stream corrections, improvements & sustainability



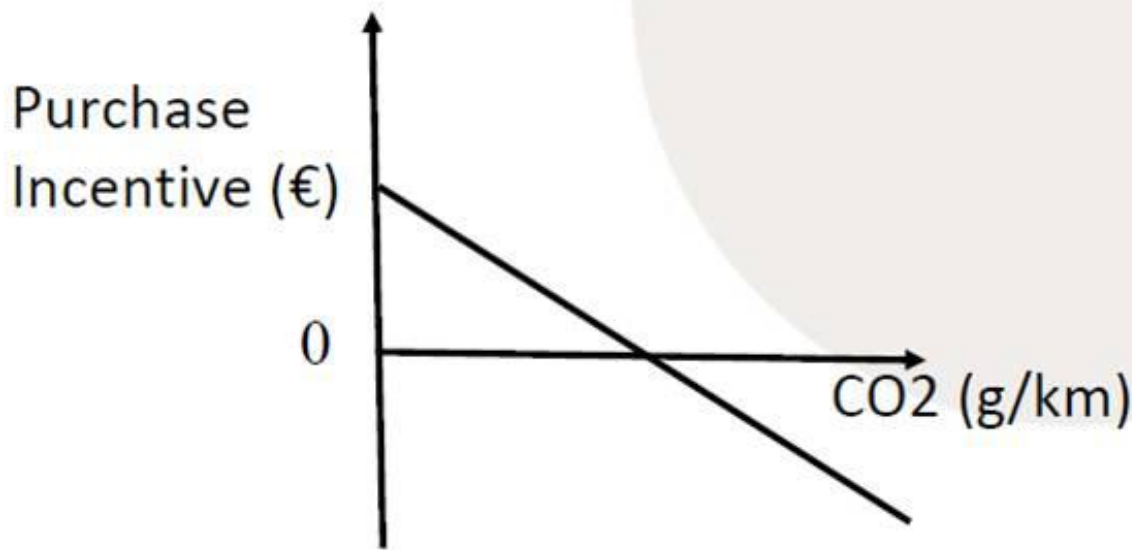
# THE **SENSIBLE** POLICY APPROACH TO NGV INCENTIVES

- Incentives should be based upon the environmental quality of the fuels AND the technologies
- Incentives should be based upon market share achieved over time
- Alternatively, incentives should be lowered slowly over time, and not based upon a single end-date

# INCENTIVE FOR CLEAN FUELS & ENVIRONMENTAL TECHNOLOGIES BASED ON MARKET SHARE



# EUROPEAN COMMISSION INCENTIVES CONCEPT IN LINE WITH CO2 EMISSIONS

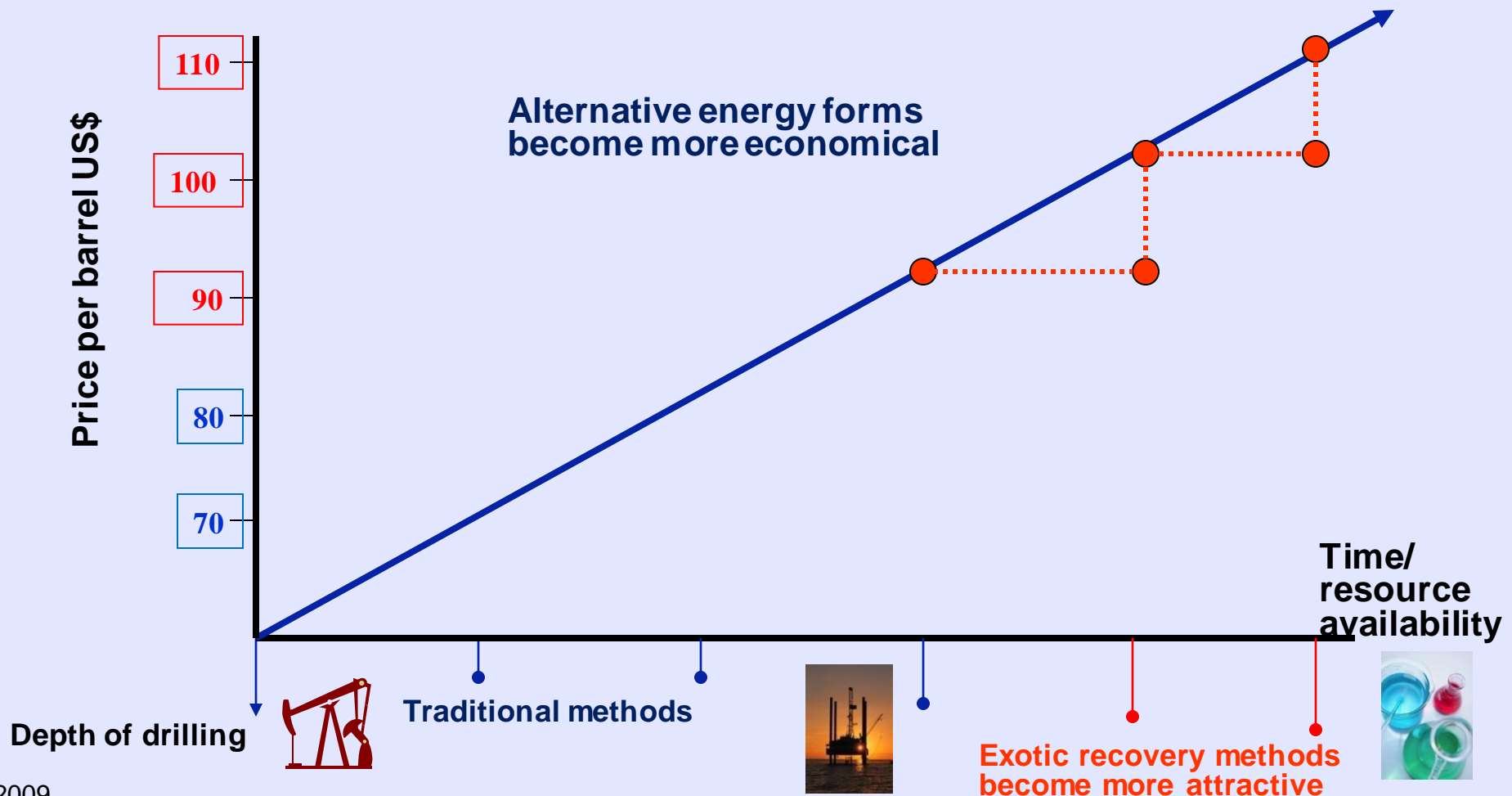


European Commission  
Enterprise and Industry

Guidelines for financial incentives for clean vehicles | 24 January 2011 | 13

# **THE CURRENT ENERGY ECONOMIC ENVIRONMENT FOR CLEAN FUELS IS FAVORABLE**

# Oil economics and the use of alternative energy



# CONCLUSIONS

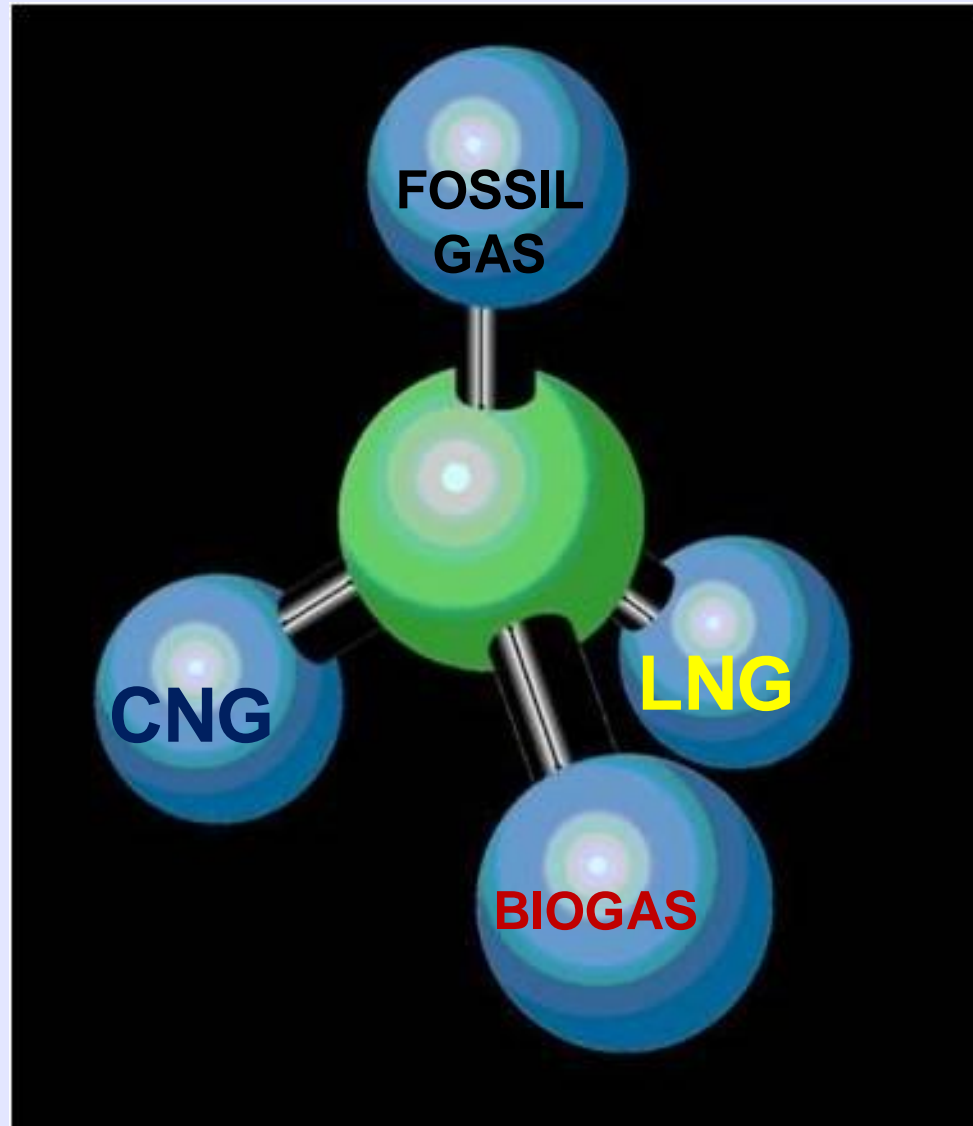
- Vast opportunities to ‘incentivize’ markets exist
- Incentives (rewards) **or** mandates both can work but sticks are always better **with** carrots)
- The cost/benefit of environmental & health benefits should be understood by governments (value a cost per tonne reduced pollution)
- Energy security is enhanced by reducing the reliance on petroleum in favor of diversifying transportation fuels to alternatives

# CONCLUSIONS

## Avoid Past Mistakes; Learn from Creative Successes

- Policies should be long term and consistent ('knee jerk' reactive decisions kill the market)
- Rewarding early adopters works
- Reductions of incentives should be gradual
- Incentives should be linked to market share
- Credits & deductions on cost *differential* of the vehicle/fuel station, not *full* cost
- Exemptions from traffic & pollution restrictions work well (and are economic for government!)
- Free parking and special 'clean vehicle' access lanes costs little and pays off very well

# METHANE IS A DIVERSE & FLEXIBLE FUEL FOR THE TRANSPORT SECTOR





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